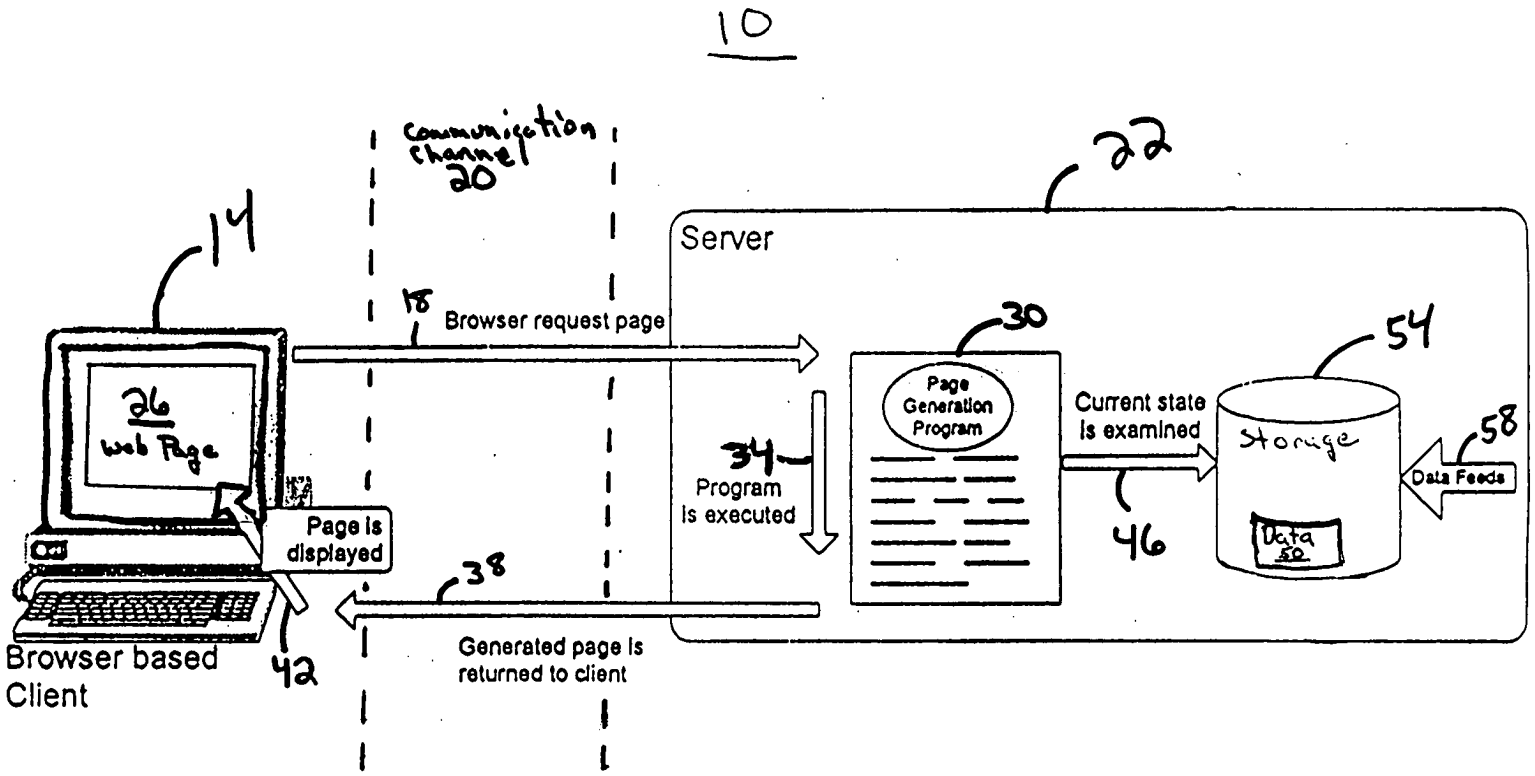


FIG. 1
Prior Art

200

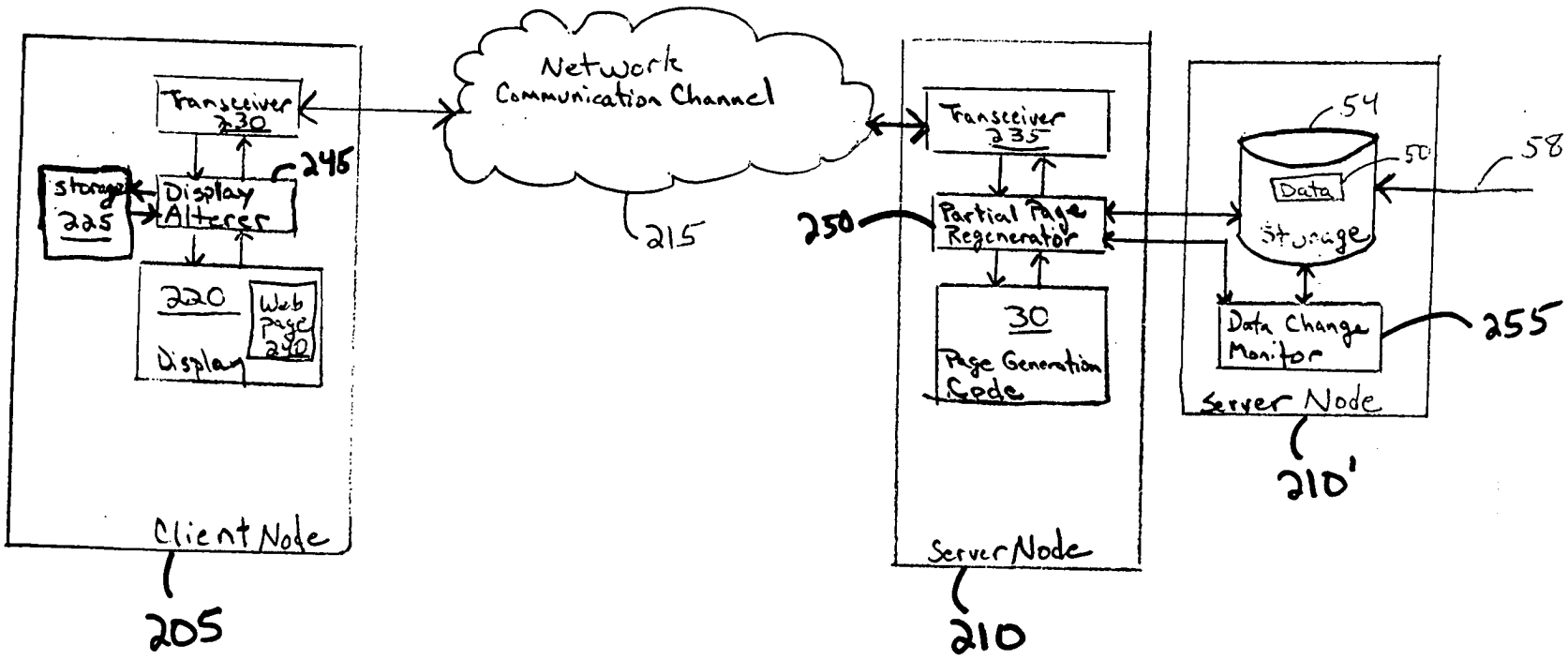


FIG. 2a

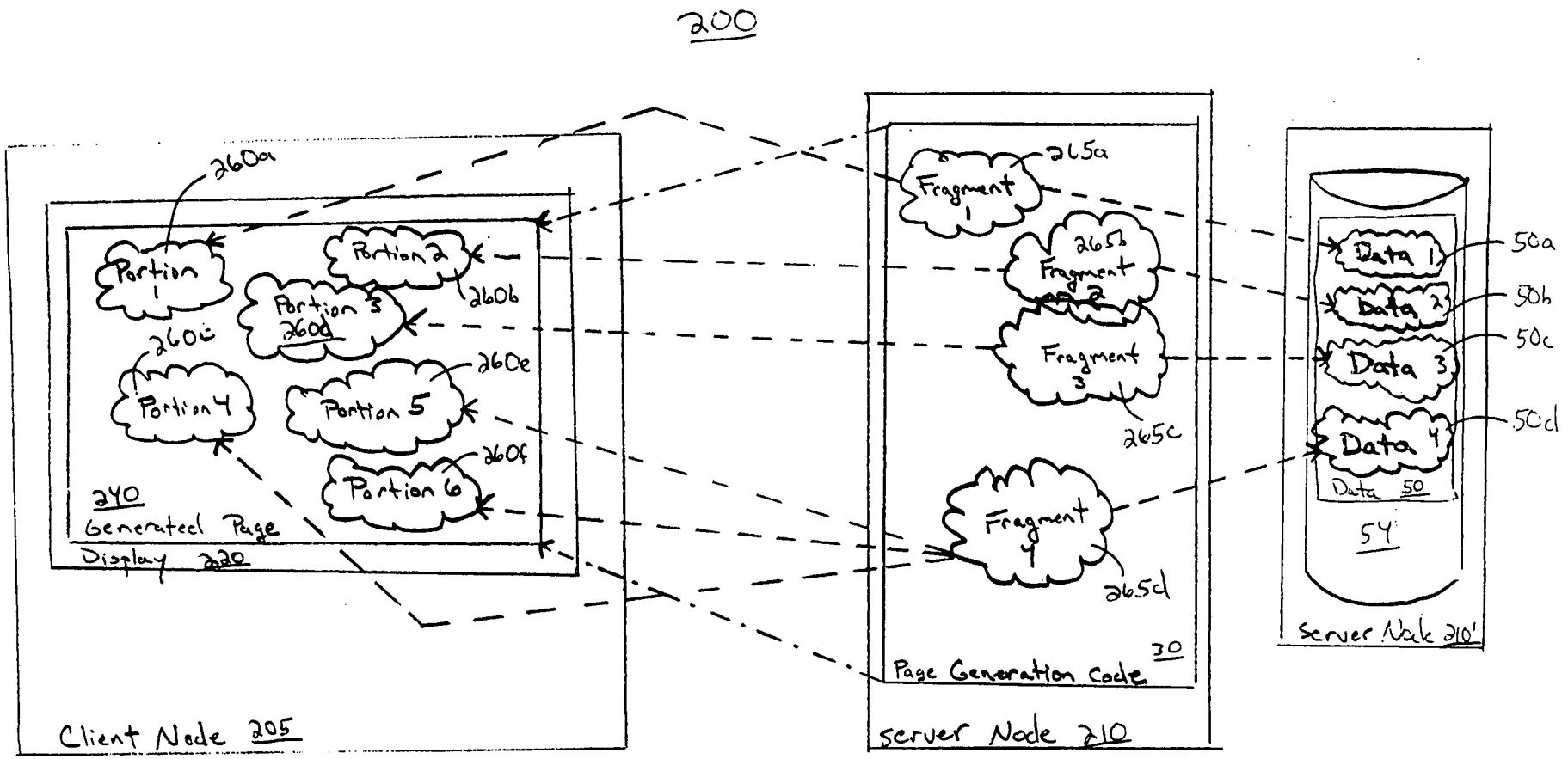


FIG. 2b

Original Servlet Code

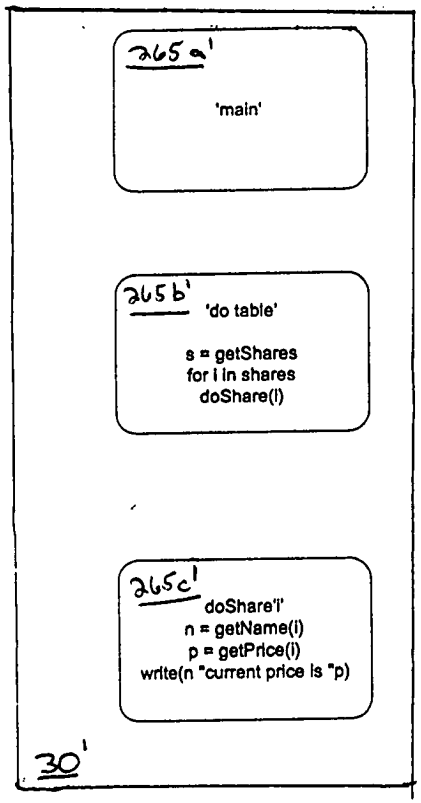


FIG. 3a

Wrapped Servlet Code

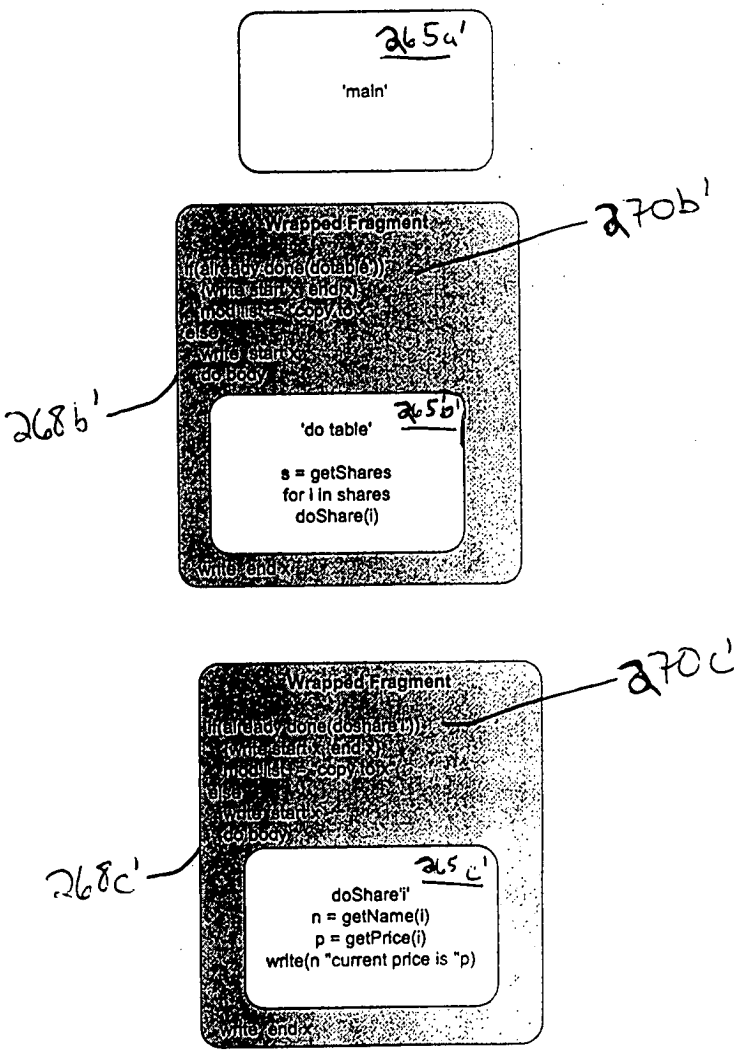


FIG. 3b

Original CGI Code

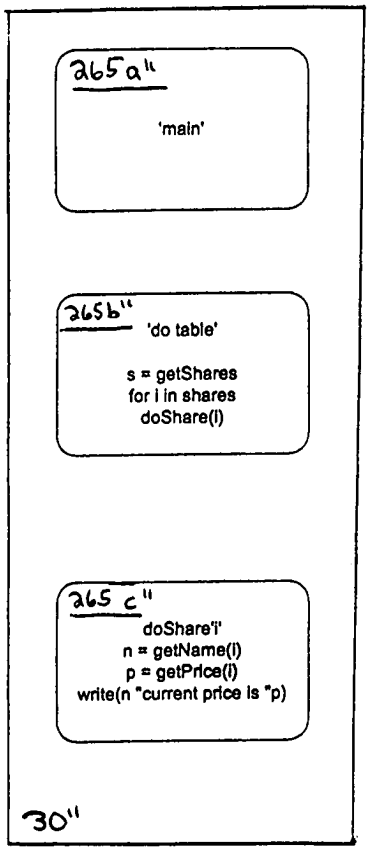


FIG. 4a

Runtime wrapping by intercepting CGI interpreter

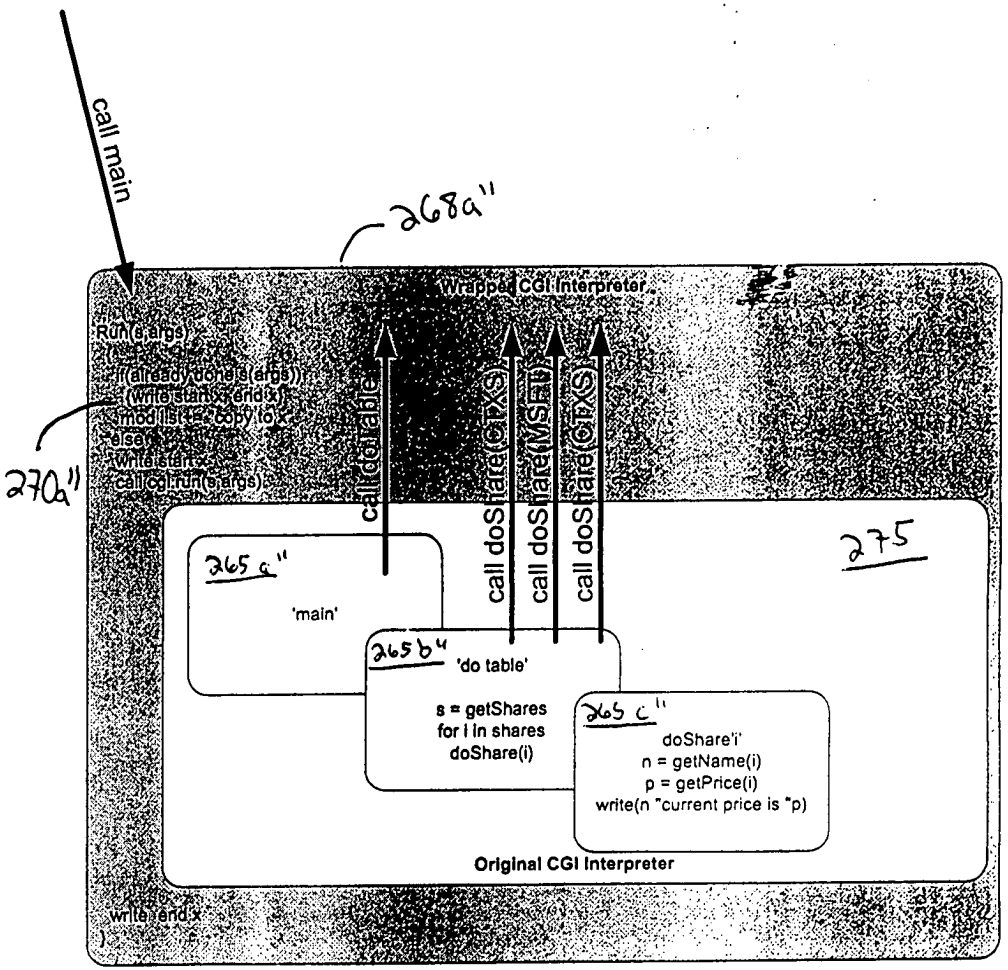
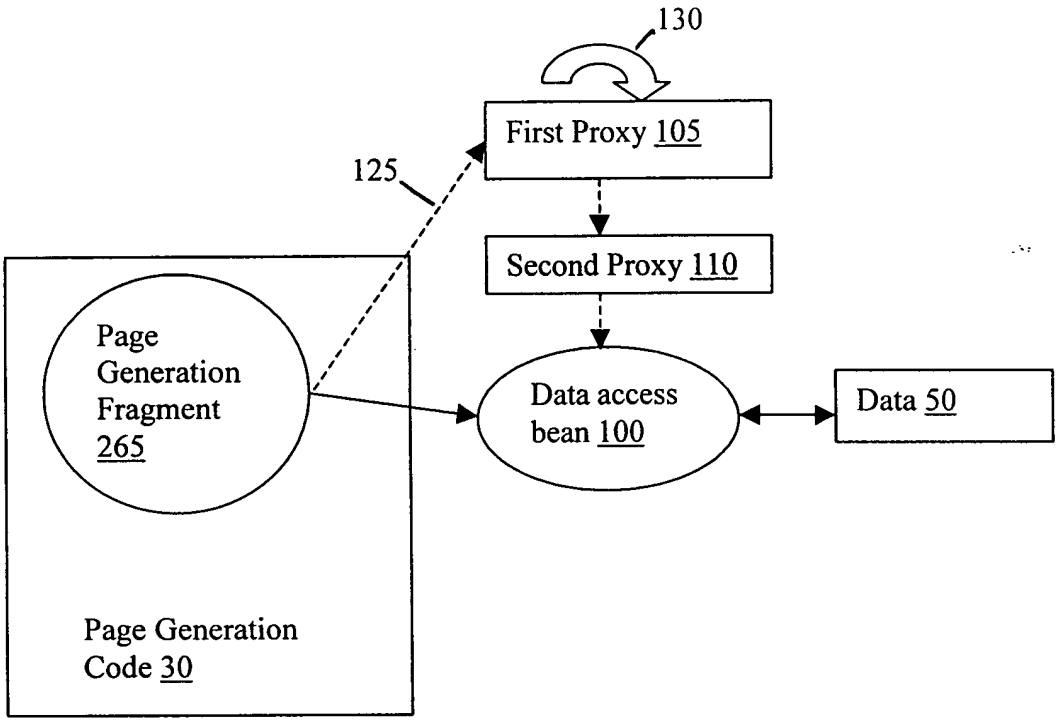


FIG. 4b

FIG. 4c


130
First Proxy 105
125
Second Proxy 110
Page
Generation
Fragment
265
Data access
bean 100
Data 50
Page Generation
Code 30

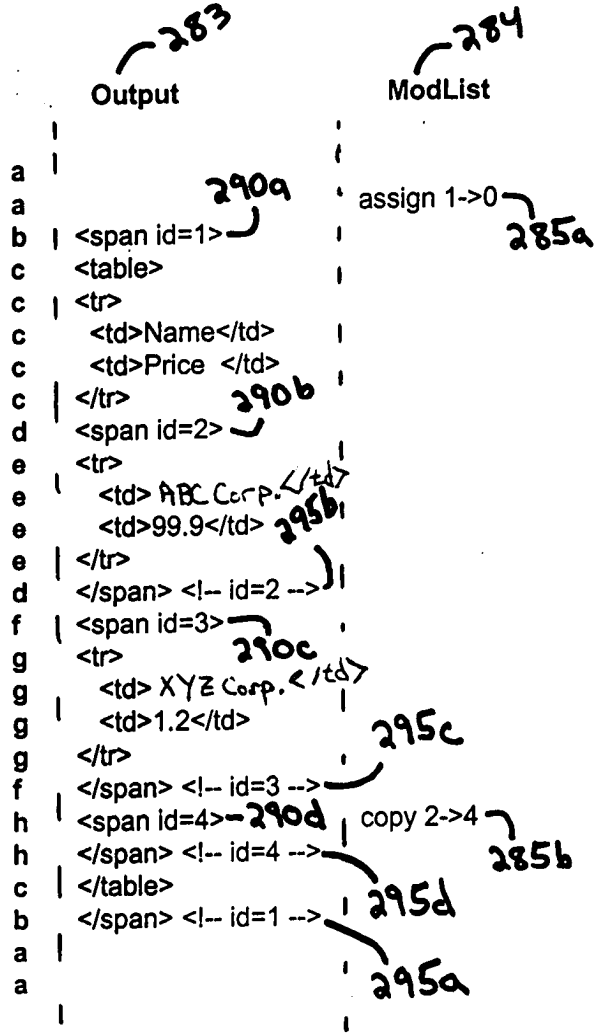


FIG. 5b

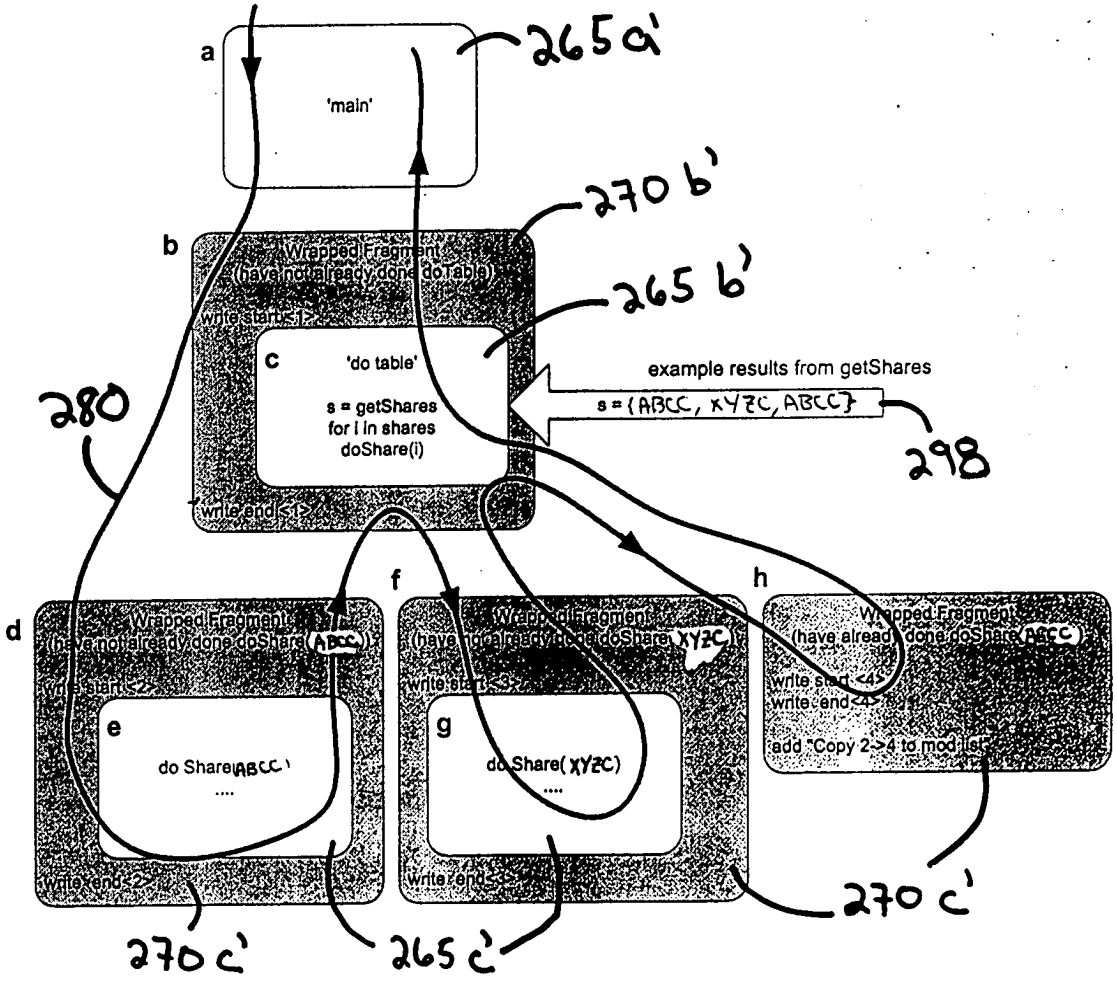


FIG. 5a

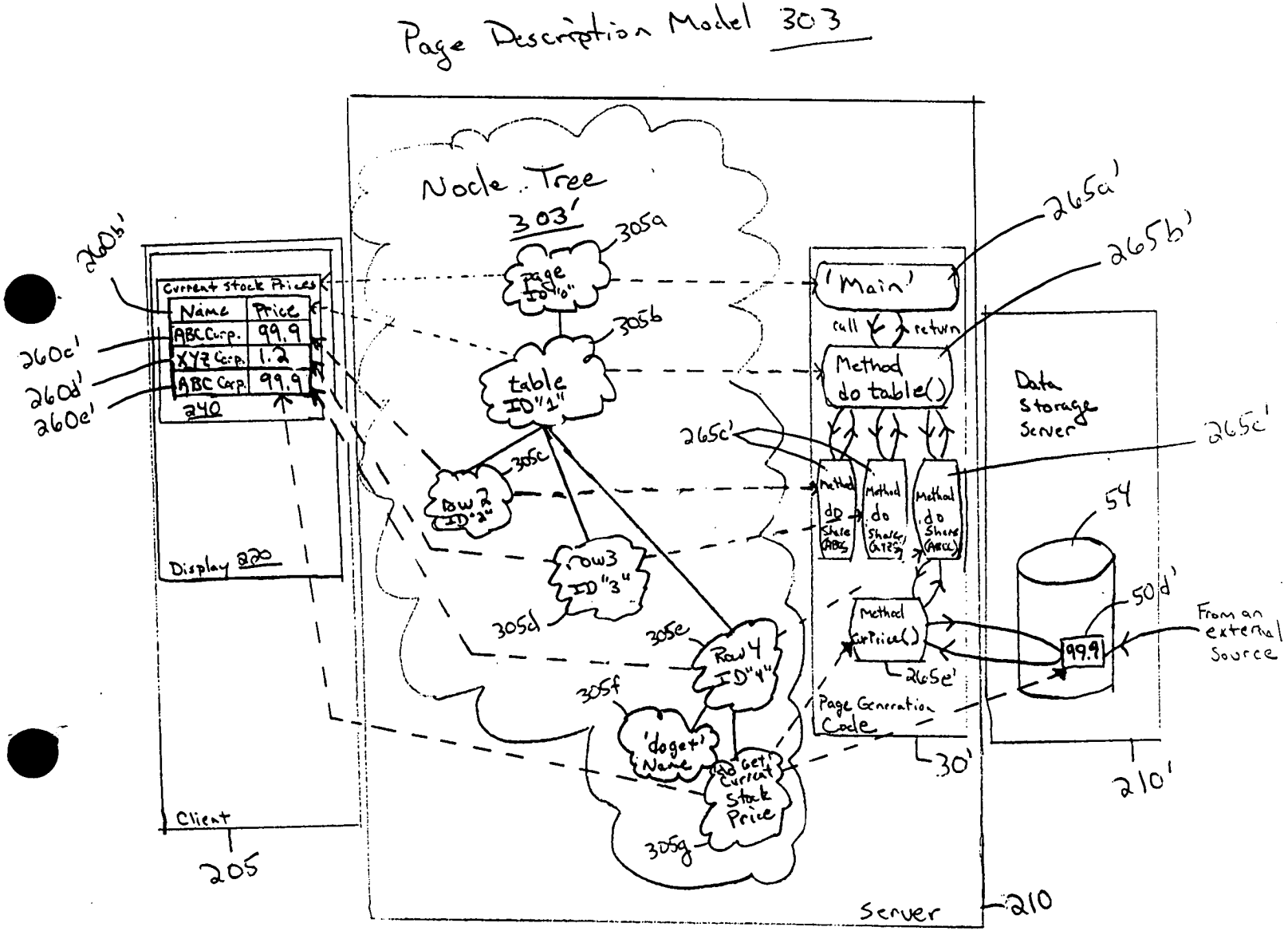


FIG. 6

300

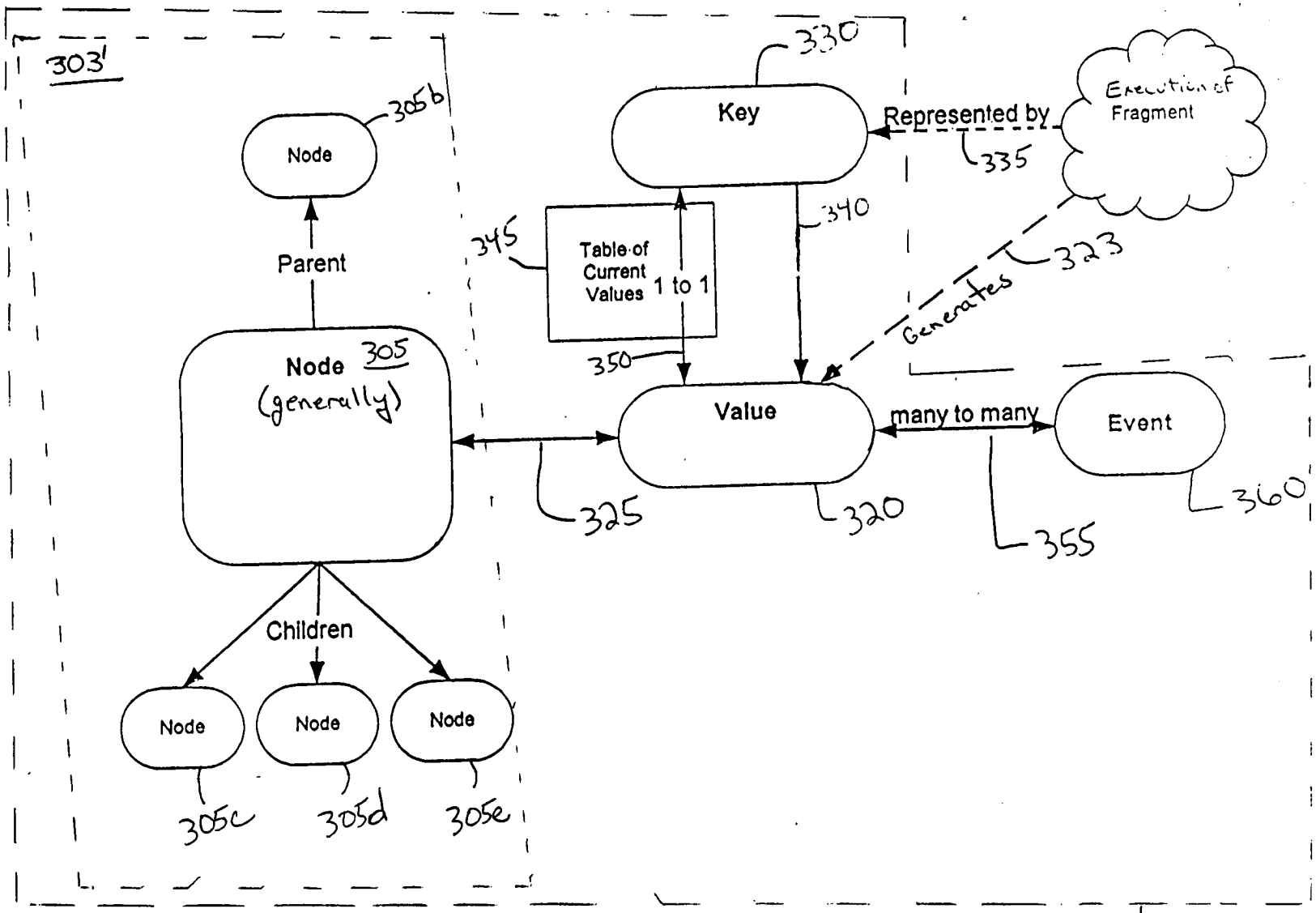


FIG 7

300'

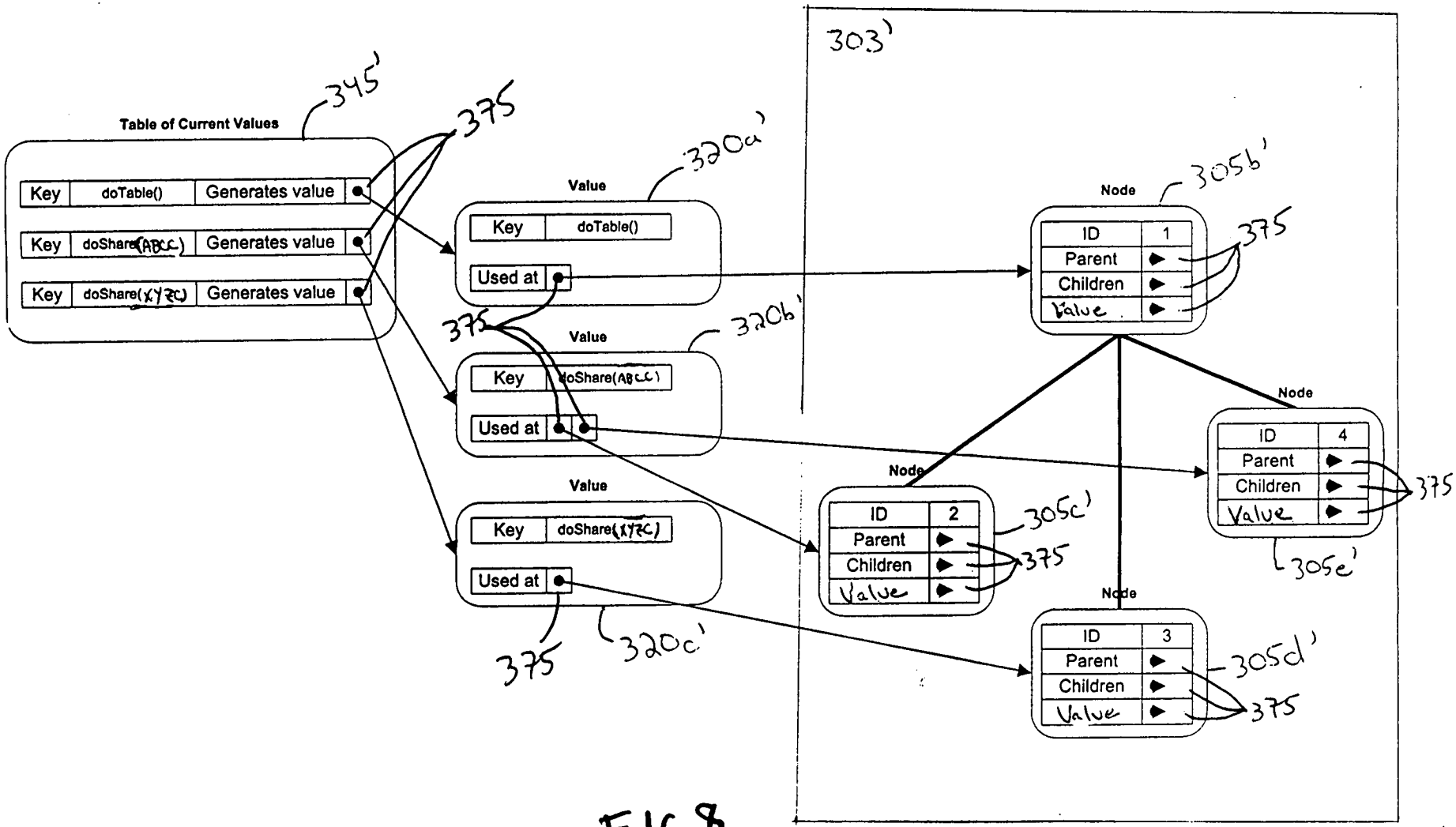

303'
345'
Table of Current Values
375
Key
doTable()
Generates value
Key
doShare(ABCC)
Generates value
Key
doShare(XYZC)
Generates value
320a'
Value
Key
doTable()
Used at
375
320b'
Value
Key
doShare(ABCC)
Used at
320c'
Value
Key
doShare(XYZC)
Used at
375
305b'
Node
ID
1
Parent
Children
Value
375
Node
ID
4
Parent
Children
Value
375
305e'
Node
ID
2
Parent
Children
Value
305c'
375
Node
ID
3
Parent
Children
Value
305d'
375

FIG 8

FIG. 9

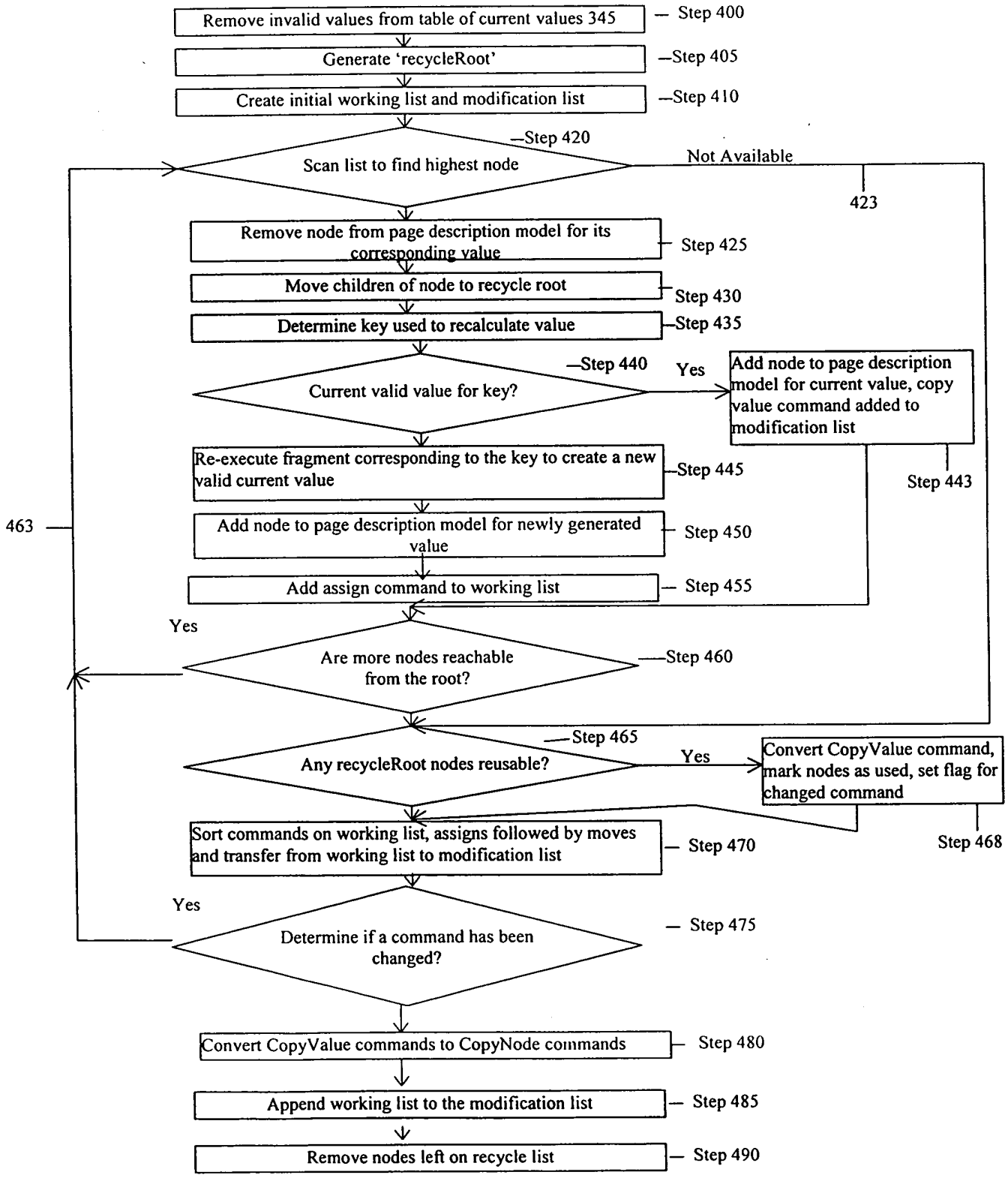
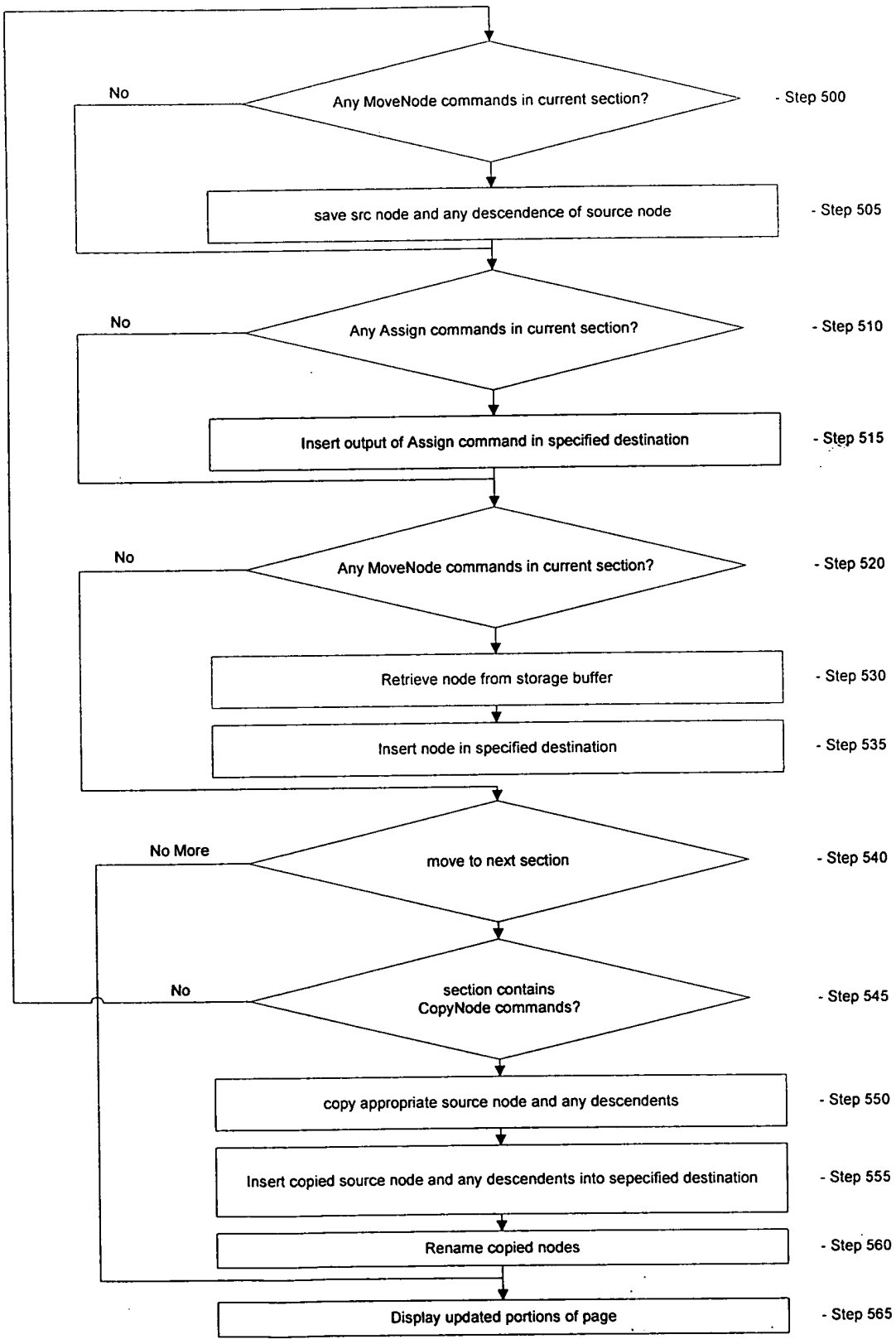

Remove invalid values from table of current values 345
Step 400
Generate 'recycleRoot'
Step 405
Create initial working list and modification list
Step 410
Step 420
Scan list to find highest node
Not Available
423
Remove node from page description model for its corresponding value
Step 425
Move children of node to recycle root
Step 430
Determine key used to recalculate value
Step 435
Step 440
Current valid value for key?
Yes
Add node to page description model for current value, copy value command added to modification list
Step 443
Re-execute fragment corresponding to the key to create a new valid current value
Step 445
463
Add node to page description model for newly generated value
Step 450
Add assign command to working list
Step 455
Yes
Are more nodes reachable from the root?
Step 460
Step 465
Any recycleRoot nodes reusable?
Yes
Convert CopyValue command, mark nodes as used, set flag for changed command
Step 468
Sort commands on working list, assigns followed by moves and transfer from working list to modification list
Step 470
Yes
Determine if a command has been changed?
Step 475
Convert CopyValue commands to CopyNode commands
Step 480
Append working list to the modification list
Step 485
Remove nodes left on recycle list
Step 490

FIG. 10


Any MoveNode commands in current section?
No
- Step 500
save src node and any descendence of source node
- Step 505
Any Assign commands in current section?
No
- Step 510
Insert output of Assign command in specified destination
- Step 515
Any MoveNode commands in current section?
No
- Step 520
Retrieve node from storage buffer
- Step 530
Insert node in specified destination
- Step 535
move to next section
No More
- Step 540
section contains CopyNode commands?
No
- Step 545
copy appropriate source node and any descendents
- Step 550
Insert copied source node and any descendents into sepecified destination
- Step 555
Rename copied nodes
- Step 560
Display updated portions of page
- Step 565

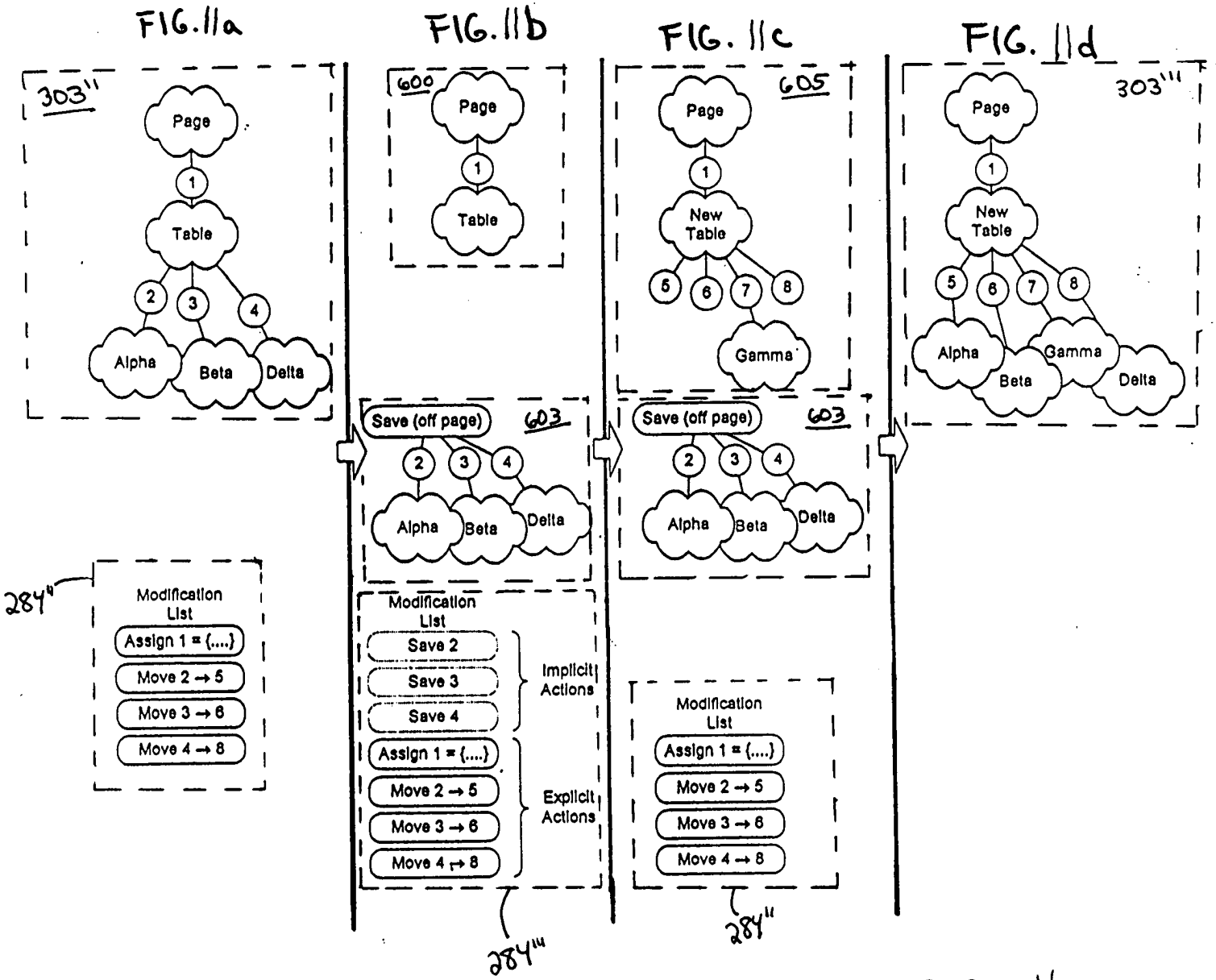
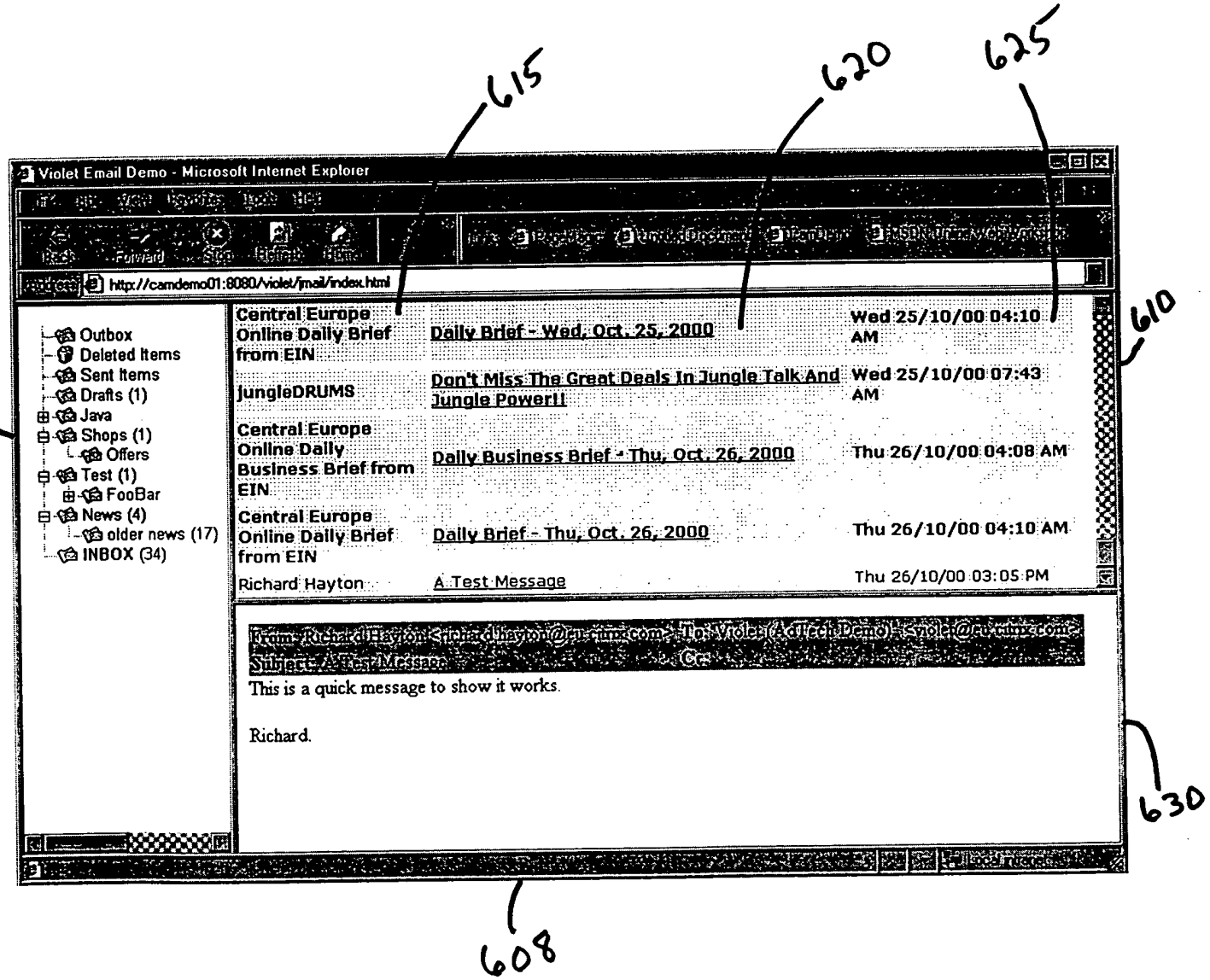


FIG. 11a
FIG. 11b
FIG. 11c
FIG. 11d
303''
Page
1
Table
2
3
4
Alpha
Beta
Delta
600
603
605
303'''
New Table
5
6
7
8
Gamma
Save (off page)
Modification List
Assign 1 = {....}
Move 2 → 5
Move 3 → 6
Move 4 → 8
Save 2
Save 3
Save 4
Implicit Actions
Explicit Actions
284'
284''
284'''

FIG. 11

FIG. 12


615
620
625
610
635
630
608
Violet Email Demo - Microsoft Internet Explorer
http://camdemo01:8080/violet/jmail/index.html
Outbox
Deleted Items
Sent Items
Drafts (1)
Java
Shops (1)
Offers
Test (1)
FooBar
News (4)
older news (17)
INBOX (34)
Central Europe Online Daily Brief from EIN
Daily Brief - Wed, Oct. 25, 2000
Wed 25/10/00 04:10 AM
jungleDRUMS
Don't Miss The Great Deals In Jungle Talk And Jungle Power!!
Wed 25/10/00 07:43 AM
Central Europe Online Daily Business Brief from EIN
Daily Business Brief - Thu, Oct. 26, 2000
Thu 26/10/00 04:08 AM
Central Europe Online Daily Brief from EIN
Daily Brief - Thu, Oct. 26, 2000
Thu 26/10/00 04:10 AM
Richard Hayton
A Test Message
Thu 26/10/00 03:05 PM
Subject: A Test Message
Cc:
This is a quick message to show it works.
Richard.